## LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

(Currently Amended) 1. Apparatus for detecting the oscillation amplitude of an oscillating object, the apparatus comprising:

an optical radiation source;

a detector oriented for receiving optical radiation from said optical radiation source,

said detector comprising first and second optical radiation sensors ~~sensing areas~~ adjacent each other and both receiving said optical radiation from said optical radiation source,

the detector and the optical radiation source being adapted to be located on opposite sides of ~~each other with~~ the oscillating object from each other, with the oscillating object located between the source and the detector so that when so located, the object blocks a portion of the ~~sensing areas from receiving~~ optical radiation directed toward said detector from the source; and

a processor coupled to the detector to receive first and second output signals generated respectively by the first and second sensors and representing the magnitude of optical radiation sensed by the first and second optical radiation sensors ~~sensing areas~~, respectively;

wherein the ~~first~~ processor processes ~~processing~~ the first and second output signals to obtain an indication of the amplitude of oscillation of the object.

(Original ) 2. Apparatus according to claim 1, wherein the processor generates an output oscillation signal that is applied to the oscillating object to modify the oscillation amplitude of the object in response to the oscillation amplitude indicated by the processor.

(Original) 3. Apparatus according to claim 2, wherein the output oscillation signal is input to a control device that controls oscillation of the object.

(Original) 4. Apparatus according to claim 3, wherein the control device compares the oscillation amplitude with a reference value and controls the oscillation of the object so that the object oscillates at an amplitude substantially equal to the reference value.

(Previously Amended) 5. Apparatus according to claim 3, wherein the oscillation amplitude is controlled in real time.

(Previously Amended) 6. Apparatus according to claim 1, wherein the width of each of the first and second optical radiation sensing areas is greater than the sum of half the width of the oscillating object and the amplitude of oscillation of the object.

(Previously Amended) 7. Apparatus according to claim 1, wherein the first and second optical radiation sensing areas are directed towards the optical radiation source.

(Previously Amended) 8. Apparatus according to claim 1, wherein the first and second optical radiation sensing areas are not directed towards the optical radiation source and the detector further comprises an optical device to direct the optical radiation onto the first and second sensing areas.

(Original) 9. Apparatus according to claim 7, wherein the first and second optical radiation sensing areas are adjacent each other.

(Previously Amended) 10. Apparatus according to claim 1, wherein the oscillating object is a tip of an ultrasonic transducer for use in an ultrasonic welding machine.

(Previously Amended) 11. A wire bonder comprising apparatus according to claim 1.

(Previously Amended) 12. A wire bonder according to claim 3, wherein the control device comprises an ultrasonic wave controller.

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(Currently Amended) 13. A method of detecting the oscillation amplitude of an oscillating object, the method comprising the steps of:

positioning an optical radiation source and an optical radiation detector on opposite sides of the object,

the detector being oriented for receiving optical radiation from said optical radiation source,

the detector comprising first and second optical radiation sensors ~~sensing areas~~ adjacent each other and both receiving said optical radiation from said optical radiation source,

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the oscillating object being located between the source and the detector so that the object blocks a portion of the optical radiation directed toward said detector from said source;

illuminating the object and the detector with optical radiation from the source; and

processing first and second output signals generating respectively by ~~from~~ the first and the second optical radiation sensors ~~sensing areas~~ to determine the oscillation amplitude of the object.

(Original) 14. A method according to claim 13, wherein the first and second output signals are processed by comparing the sum of the first and second output signals with the difference between the first and second output signals.

(Previously Amended) 15. A method according to claim 13, wherein the oscillating object is a tip of an ultrasonic transducer in an ultrasonic welding machine.

(Previously Amended) 16. A method according to claim 13, further comprising controlling the oscillation amplitude of the oscillating object in response to the determined oscillation amplitude.

(Original) 17. A method according to claim 16, wherein the oscillation amplitude is controlled by comparing the determined oscillation amplitude with a reference value and controlling the oscillation of the object to oscillate at an amplitude substantially equal to the reference value.

(Previously Amended) 18. A method according to claim 16, wherein the oscillation amplitude is controlled in real time.

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(New) 19. Apparatus according to claim 1, wherein said optical radiation sensors receive said optical radiation directly from said optical radiation source.

(New) 20. Apparatus according to claim 19, wherein said detector is oriented facing said optical radiation source.

(New) 21. Apparatus according to claim 1, wherein said detector is oriented facing said optical radiation source.

(New) 22. Apparatus according to claim 13, wherein said optical radiation sensors receive said optical radiation directly from said optical radiation source.

(New) 23. Apparatus according to claim 22, wherein said detector is oriented facing said optical radiation source.

(New) 24. Apparatus according to claim 13, wherein said detector is oriented facing said optical radiation source.